

Scores achieved by each group with each device

	No	Rotahaler			Aerosol			Spinhaler			Mean total score (max 6)
		No scoring:		Mean score	No scoring:		Mean score	No scoring:		Mean score	
		1 pt	2nd pt		1 pt	2nd pt		1 pt	2nd pt		
Paediatricians	10	3	0	0.30	9	4	1.3	3	2	0.50	2.10
Physicians	13	4	0	0.31	12	2	1.08	6	2	0.62	2.00
General practitioners	19	11	0	0.58	19	9	1.47	14	5	1.00	3.05
Paediatric nurses	10	6	0	0.6	10	3	1.30	7	2	0.90	2.90
Medical nurses	10	2	0	0.2	10	3	1.30	2	1	0.30	1.80
	62	26	0	0.42	60	21	1.31	32	12	0.71	2.44

The numbers shown for those scoring one point include those who also scored the additional, second, point.

scored the top mark of five out of six: four were general practitioners and only one was a nurse (from the medical department). The paediatric nurses' scores were relatively high but they scored relatively few marks on refinements of technique.

Nobody appreciated that any powder remaining in the opaque portion of the Rotacap does not emerge however hard the patient inhales. Although the instruction leaflet depicts loading the device with the mouthpiece down it does not say why and 62% of those who could load the device kept it horizontal throughout, expecting spillage.

Delegation may sometimes be appropriate, but it was usually done without awareness of the competence of the delegate to teach. The general practitioners may have been more familiar with the devices because they had less opportunity to delegate. Follow up is usually performed by doctors and we will continue to be given clues by patients that their technique is poor. We must be competent enough ourselves to pick up these clues. Unless we handle and talk about these devices regularly with patients who use them day in and day out we will not remain familiar with the host of possible errors.

¹ Newman SP. The correct use of inhalers. In: Clark TJH, ed. *The correct use of inhaled steroids in asthma*. Auckland: Adis Press, 1983.

² Crompton GK. Problems patients have using pressurised aerosols. *Eur J Respir Dis* 1982;**63** (suppl):101.

³ Self TH, Brooks JB, Lieberman P, Ryan MR. The value of demonstration and role of the pharmacist in teaching the correct use of pressurised bronchodilators. *Can Med Assoc J* 1983;**128**:129-31.

⁴ Kelling JS, Strohl KP, Smith RI, Altose MD. Physician knowledge in the use of canister nebulisers. *Chest* 1983;**4**:612-4.

⁵ Frew AJ, MacFarlane JTM. Are medical staff any better at using inhalers than their patients? *Proceedings of the British Thoracic Society* 1982; **37**:780.

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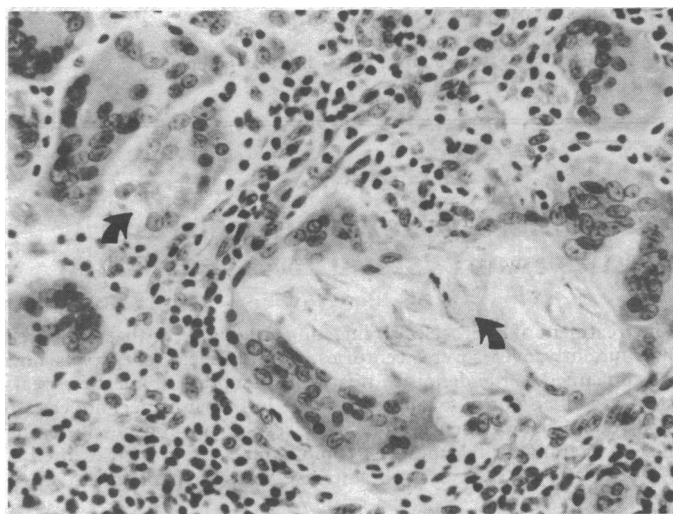
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Aerosol antiperspirants and axillary granulomata

Preparations containing aluminium or zirconium, such as vaccines, cosmetics, and antiperspirants, produce occasional inflammation and granulomas. Both the patients described here developed chronic axillary granulomas after using an underarm deodorant spray containing aluminium.

Case reports

Case 1—A 20 year old woman, previously healthy except for well controlled epilepsy, complained of recurrent painful swellings in both axillae. These had been treated with occasional courses of antibiotics, but the response had been unsatisfactory. On examination she had a tender lump about 2 cm in diameter in the left axilla. The diseased skin was widely excised along with extensive underlying granulation tissue. When questioned at follow up the patient confirmed that she was in the habit of shaving her armpits and admitted using the antiperspirant preparation Arid Extra Dry underarm powder spray.



Case 1. Giant cells containing talc (arrowed). Haematoxylin and eosin $\times 800$.

Case 2—A healthy 31 year old woman presented with a painful subcutaneous nodule in the right axilla, surmounted by a small pigmented naevus. The lump was excised. The patient admitted using the same antiperspirant as the first patient, spraying it from close range after shaving her armpits.

In both cases light microscopic examination of the lesions showed a granulomatous response within the dermis and subcutaneous tissues. Examination with polarised light showed that giant cells contained doubly refractile crystals. Some of these cells, and others which did not contain crystals, stained positively for aluminium with solochrome azurine at pH 5. When examined by wavelength dispersive electron probe analysis the crystals were shown by their mineral content to be talc. The presence of aluminium in histiocytes and giant cells was confirmed.

Comment

Granuloma formation in these two cases occurred in response to a mixture of talc and aluminium salts. Subcutaneous granuloma formation has been reported after injection of triple vaccine,^{1,2} and x ray crystallography has shown that the agent responsible was the aluminium hydroxide adjuvant. Although recent work has refuted the traditional indictment of depilation and deodorants as a cause of hidradenitis suppurativa,³ certain spray preparations may provide a jet injection of aluminium salts, a known cause of granulomas.⁴

The manufacturers of Arid Extra Dry describe its active constituent as talcum powder coated with aluminium trichloride. The latter hydrolyses to aluminium hydroxide in physiological conditions.

Savage has suggested that the presence of elemental aluminium within such lesions could be detected by electron probe analysis,² and this was possible in both of our cases.

Granulomas of the axillae have been reported in a German patient who used deodorants containing zirconium but did not shave.⁵ Shaving the axillae is endemic among British women, as is the use of underarm deodorants. Entry of particles from the deodorant is probably facilitated by the mild abrasion of shaving, and the manufacturers of Arid Extra Dry state on the canister that the product should not be applied to broken, irritated, or sensitive skin, and should be discontinued if the skin becomes irritated or a rash develops. Our cases illustrate the possible consequences of using this type of pressurised powder antiperspirant, particularly if the manufacturer's instructions are not rigidly followed.

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- ⁴ Lenz TR. Foreign-body granuloma caused by jet injection of tetanus toxoid. *Rocky Mountain Medical Journal* 1966;63:48.
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Sclerotherapy for hydrocele and epididymal cysts: a five year study

The treatment of hydroceles by injecting various agents has been used intermittently over several centuries.¹ Nevertheless, surgery is now recommended as the definitive treatment. The reason injection treatment has fallen out of favour is not clear but such neglect appears to be based on poor evidence.² The early results of a prospective study of sclerotherapy for hydrocele and epididymal cysts were presented in 1979³; this paper reviews the results five years after treatment.

Patients, methods, and results

Seventy symptomatic patients (mean age 63, range 35-86) with one or more hydrocele or epididymal cysts were included in the study (those who had an ipsilateral inguinal hernia were rejected). Some 14 patients had to be excluded as they did not complete the course of treatment; six required surgery as there was a bloodstained tap or the lump did not transilluminate; five failed to attend follow up appointments; and three died of unrelated causes. The 56 remaining patients had 49 hydroceles and 14 epididymal cysts. The method of treatment³ was, in summary, to transilluminate the scrotum to confirm the diagnosis and identify the testis. A size 18 gauge Medicut was then inserted into the upper border of the hydrocele or cyst under local anaesthesia. The Medicut was used because a plastic cannula is less likely to damage the lining of the sac and is unlikely to slip out when the operator is aspirating fluid or injecting sclerosant. The fluid was completely aspirated and its volume measured. The sclerosant (2.5% phenol in water) was then injected: 5 ml into a sac containing less than 50 ml of fluid, 10 ml for 51-200 ml; 15 ml for 201-400 ml; and 20 ml for over 400 ml. The patients were seen every six weeks and the treatment repeated until no fluid reaccumulated.

All 49 hydroceles and 14 epididymal cysts were successfully treated (table). The commonest side effect was testicular pain at injection, which

Details of treatment

Size (ml)	Type	No	Mean no of times injected (range)	Recurrence at 1 year (size of recurrence)	Recurrence at 5 years (size of recurrence)
0-50	Epididymal cyst	8	1.1 (1-2)		
	Hydrocele	4	1.25 (1-2)	1 (40 ml)	
51-200	Epididymal cyst	5	1.6 (1-3)	1 (15 ml)	
	Hydrocele	18	1.7 (1-3)		1 (20 ml)
201-400	Epididymal cyst	1	4		
	Hydrocele	18	1.7 (1-3)	1 (60 ml)	2 (20 ml, 100 ml)
≥401	Hydrocele	9	2.2 (1-4)		1 (15 ml)

lasted for only a short time. Eleven developed some epididymal thickening but this was noted only in the large hydroceles; three complained of testicular tenderness for up to two weeks after injection; two developed a mild infection, which resolved with antibiotics; and one patient developed a transient macular rash thought to be an allergic reaction to phenol. One year after treatment two hydroceles and one epididymal cyst had recurred and these were retreated. After five years 11 patients had died and three could not be traced, leaving 42 for assessment; these patients had had 38 hydroceles and

10 epididymal cysts. Four hydroceles recurred (table), but only one (of 100 ml in what had originally been 270 ml) was noticed by the patient.

Comment

The early results of this study confirmed the efficacy of this method of treatment.⁴ Recently Macfarlane using a different sclerosant has reported equally good early results.⁵ The three early recurrences were successfully retreated and had not recurred at the five year review. Three of the patients with late recurrences were asymptomatic and did not require further treatment, leaving a symptomatic recurrence rate of 3% for hydroceles. The testicular pain after injection of the phenol is mild and may be avoided by injecting a small quantity of local anaesthetic into the sac before the phenol. None of the complications resulted in hospital admission. Residual epididymal or testicular thickening after treatment of the larger hydroceles is not surprising in view of the size of the tunica vaginalis. Nevertheless, the end result was always acceptable to the patient given the appreciable reduction in the size of the swelling. The other six complications were minor and might be regarded as unimportant compared with those of operative treatment.⁴

This report refutes the criticism that recurrences are likely to occur over the long term as only one notable recurrence has appeared over five years. Although this method is simple, it must be performed properly. Thus phenol sclerotherapy is highly effective, safe, and cheap. It should always be considered for the treatment of adults and should be regarded as the treatment of choice in the elderly.

¹ Landes RR, Leonhardt KO. The history of hydrocele. *Urologic Survey* 1967;17:135-46.

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⁴ Maloney GE. Comparison of results of treatment of hydrocele and epididymal cyst by surgery and injection. *Br Med J* 1975;3:478-9.

⁵ Macfarlane JR. Sclerosant therapy for hydroceles and epididymal cysts. *Br J Urol* 1983;55:81-2.

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Reversal with balsalazide of infertility caused by sulphasalazine

Sulphasalazine is commonly used to maintain remission in ulcerative colitis but has many toxic side effects including infertility in men. Compounds of the drug have been designed without the sulphonamide moiety, which is thought to be the specifically toxic factor. We used one of these new compounds, balsalazide (5-(carboxy ethylcarbonyl-4-phenylazo)-salicylic acid), to treat three young men who presented with infertility induced by sulphasalazine. We report here the results.

Patients, methods, and results

Three men with ulcerative colitis, in whom remission of disease was maintained with sulphasalazine 2-3 g daily, presented with infertility. Two had a history of relapse after stopping sulphasalazine and had subsequently taken the drug for nine and 12 months respectively. The third had not experimented with withdrawal of treatment and had taken sulphasalazine continually for five years. Two had fathered children before receiving sulphasalazine. After giving informed consent the patients received balsalazide 2 g daily for four months. They were asked to provide semen specimens before and at monthly intervals during treatment; the numbers and motility of their sperms were determined. Full blood counts, serum biochemical tests, and urine microscopy were performed monthly. Clinical examination and sigmoidoscopy were used to monitor the patients' colitis, and rectal mucosal biopsies were undertaken before and after treatment.

Remission of colitis was maintained in all three patients as judged by their symptoms and the sigmoidoscopic and histological appearances of the mucosa. The table shows that the sperm count and motility returned to normal in two patients within the treatment period. The third patient failed to provide more than the initial semen specimen despite repeated requests, but his wife became pregnant during the third month of treatment. No patient reported